Australian Government

Department of Education, Employment and Workplace Relations

MEA271A Lay out avionic flight management systems

Revision Number: 1

MEA271A Lay out avionic flight management systems

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit is part of Diploma and Advanced Diploma training pathways. It covers the basic design and layout to block diagram level of avionic flight management systems. No licensing requirements apply to this unit at the time of publication.

Application of the Unit

Application of the unit	This unit requires application of basic knowledge of avionic flight management systems function, design and layout. Applications include typical instrument, radio and electronic systems.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		
	MEA101B	Interpret occupational health and safety practices in aviation maintenance
	MEA107B	Interpret and use aviation maintenance industry manuals and specifications

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Prerequisite units		
	MEA109B	Perform basic hand skills, standard trade practices and fundamentals in aviation maintenance
	MEA270A	Lay out avionic systems

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Lay out to block diagram level a flight instrument system	1.1. The various ***aircraft flight instrument systems*** are identified. 1.2. ***Flight instrument system components*** are identified. 1.3. A typical advanced flight instrument system is sketched at block diagram level. 1.4. Flight instrument system maintenance requirements are identified.
2. Lay out to block diagram level an instrument navigation system	2.1. The various ***instrument navigation systems*** are identified. 2.2. ***Instrument navigation system components*** are identified. 2.3. A typical instrument navigation system is sketched at block diagram level. 2.4. Instrument navigation system maintenance requirements are identified.
3. Lay out to block diagram level an aircraft communication system	3.1. ***Aircraft communication systems*** are identified. 3.2. ***Communication system components*** are identified. 3.3. A typical communication system is sketched at block diagram level. 3.4. Communication systems maintenance requirements are identified.
4. Lay out to block diagram level an aircraft pulse system	4.1. ***Aircraft pulse systems*** are identified. 4.2. ***Pulse system components*** are identified. 4.3. A typical pulse system is sketched at block diagram level. 4.4. Pulse system maintenance requirements are identified.
5. Lay out to block diagram level an aircraft radio navigation system	5.1. ***Aircraft radio navigation systems*** are identified. 5.2. ***Radio navigation system components*** are identified. 5.3. A typical radio navigation system is sketched at block diagram level. 5.4. Radio navigation system maintenance requirements are identified.
6. Lay out to block diagram level an aircraft electronic system	6.1. ***Aircraft electronic systems*** are identified. 6.2. ***Electronic system components*** are identified. 6.3. A typical electronic system is sketched at block diagram level. 6.4. Electronic system maintenance requirements are

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ELEMENT	PERFORMANCE CRITERIA
	identified.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
Look for evidence that confirms skills in: • sketching typical avionic systems at block diagram level
Required knowledge
Look for evidence that confirms knowledge of: • the atmosphere • pitot static systems • magnetism • function of gyroscopes • use of synchros and servos • basics of analogue electronics • aircraft instrument systems and their components • aircraft instrument system maintenance requirements • radio, navigation and radar basics • aircraft communication, pulse and radio navigation systems and their components • communication, pulse and radio navigation system maintenance requirements • basics of digital electronics • basic computer architecture • use of data buses • automatic flight control systems and their components • automatic engine control systems and their components • flight management systems and their components • display systems and their components • aircraft electronic system maintenance requirements

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	A person who demonstrates competency in this unit must be able to identify avionic systems and their components, lay out typical systems at block diagram level and identify related maintenance requirements. Competency in this unit cannot be claimed until all prerequisites have been satisfied
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge, and be capable of applying the competency in new and different situations and contexts. Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways including direct observation, supervisor's reports, project work, samples and questioning. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency.
Context of and specific resources for assessment	This unit may be assessed off the job in a training environment. equipped to provide exposure to the range of system types and components. The candidate must have access to all tools, equipment, materials and documentation required and must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials. The assessment environment should not disadvantage the candidate.
Method of assessment	
Guidance information for assessment	

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Application of this unit may relate to:	• individual or team related activities
Aircraft flight instrument systems may include:	• airspeed indication • pitot static systems • vertical speed indication • air data • machmeter • altimeters including servo and encoding • angle of attack and stall warning/avoidance • turn and slip • directional gyros • artificial horizons • attitude heading reference
Flight instrument system components may include:	• the major components of each of the above systems that would be shown in a block diagram or schematic
Instrument navigation systems may include:	• remote reading gyro compass • direct reading compass • ground proximity warning • flight data recording • inertial navigation
Instrument navigation system components may include:	• the major components of each of the above systems that would be shown in a block diagram or schematic
Aircraft communication systems may include:	• HF radio • VHF radio • UHF radio • satellite communications • communications addressing and reporting • audio integration and intercommunications • cockpit voice recording • emergency location

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RANGE STATEMENT	
Communication system components may include:	• the major components of each of the above systems that would be shown in a block diagram
Aircraft pulse systems may include:	• navigation radar • search radar • weapons system radar • radar altimeter • air traffic control transponder • distance measuring equipment • tactical air navigation • doppler • collision avoidance
Pulse system components may include:	• the major components of each of the above systems that would be shown in a block diagram
Aircraft radio navigation systems may include:	• instrument landing • automatic direction finding • VHF omni range • global navigation
Radio navigation system components may include:	• the major components of each of the above systems that would be shown in a block diagram
Aircraft electronic systems may include:	• automatic flight control • automatic engine control • electronic instrument display • flight management
Electronic system components may include:	• the major components of each of the above systems that would be shown in a block diagram

Unit Sector(s)

Unit sector	

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Competency field

Competency field	Avionic engineering

Co-requisite units

Co-requisite units		

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